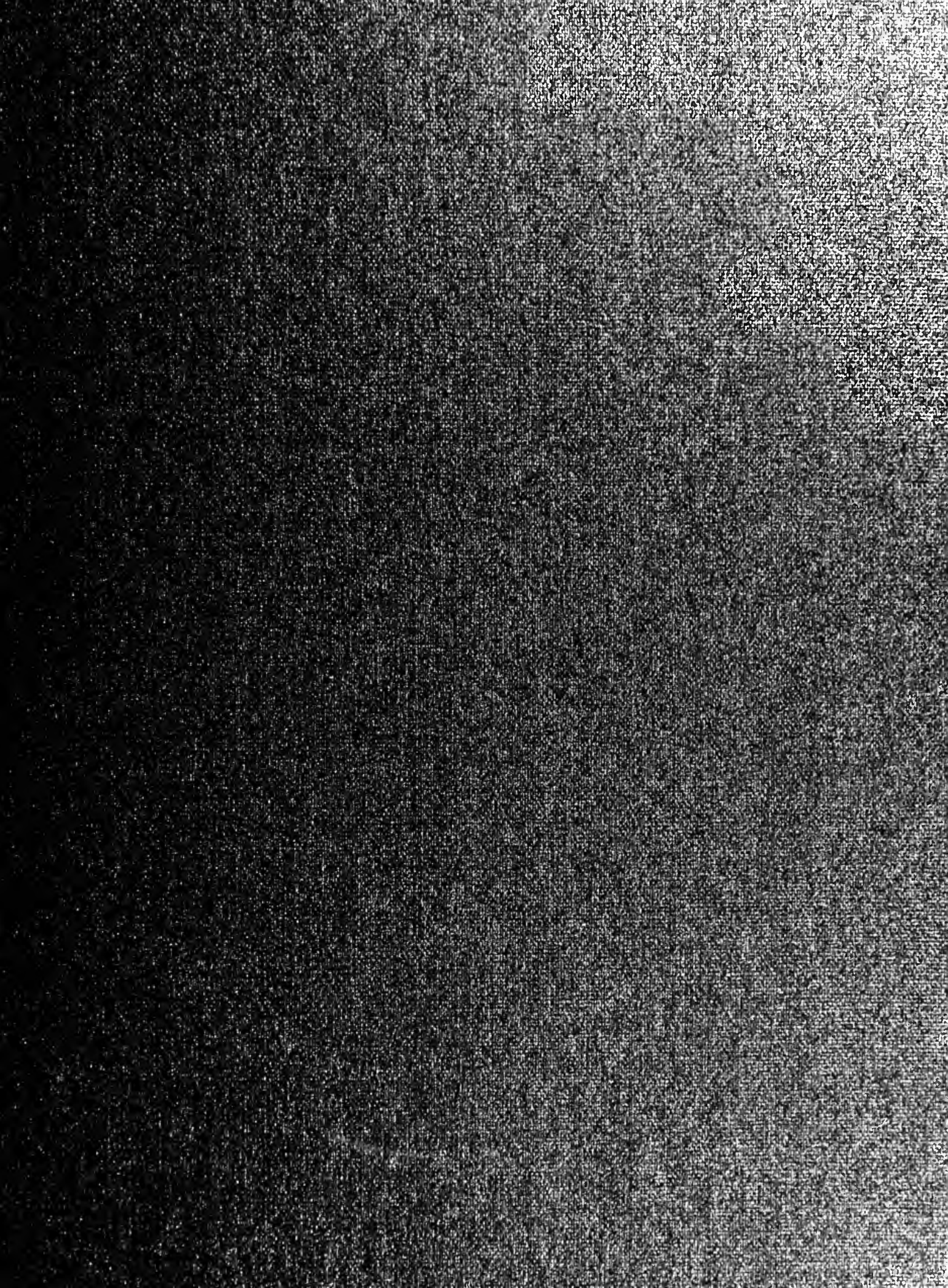

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Risk-Attitudes and the Risk Return Paradox: Prospect Theory Explanations

Avi Fiegenbaum
Howard Thomas

College of Commerce and Business Administration
Bureau of Economic and Business Research
University of Illinois, Urbana-Champaign

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Prospect Theory Explanations

Avi Fiegenbaum, Assistant
Department of Business Administration

Howard Thomas, Professor
Department of Business Administration

Department of Business Administration
University of Illinois at Urbana-Champaign
350 Commerce West, 1206 S Sixth Street
Champaign, IL 61820

Phone 217/333-4240

Abstract

This paper attempts to explain and rationalize Bowman's (1980) risk-return paradox in terms of the concept of risk attitudes and propositions drawn from prospect theory (Kahneman and Tversky (1979)). Using an extensive Compustat-based sample of U.S. firms, negative risk-return association is consistently found for firms having returns below target ROE levels whereas positive association is equally consistently found for firms having returns above target ROE levels. It should be noted that these results are supportive of the basic propositions of prospect theory and are extremely robust, i.e., they hold both within and across industries and for all time periods studied. This study also supports Bowman's (1982) notion that troubled firms take larger risks. Therefore, it is argued that future research should concentrate upon clearer identification of factors influencing risk and the formation of risk attitudes in different industry and environmental contexts.

INTRODUCTION

The relationship between risk and return has received considerable attention from researchers in business administration, economics and finance. Conventional economic wisdom (e.g., Brealey and Myers (1981)) suggests that risk and return are positively correlated. This is based on the assumption that decision-makers are risk averse, and that therefore, higher returns will be required for riskier investments.

Existing research studies (most of which are summarized in Table I of this paper) have largely supported the positive risk-return association. However, Bowman (1980) discovered that within a majority of industries risk and return were negatively correlated. He described this research outcome as a "paradox" for strategic management, since the findings ran counter to the conventional wisdom that argued for positive association. In later papers (Bowman (1982), (1984)) sought to explain this paradox and offered a series of managerial, accounting and attitudinal explanations. For example, he proposed that sound strategic management would enable firms to achieve both higher return and lower variance through accounting income smoothing and the identification of the "right" strategy for the firm. Further, he argued that firms' risk attitudes may influence risk-return profiles and that more troubled firms may take greater risks.

This study attempts to explore the role of risk attitudes in the management of strategic risk and provide a richer understanding of Bowman's risk/return paradox in terms of the concept of attitudes towards risk. Attitudes towards risk have been conceptualized in theoretical terms by a series of well-known utility theorists in

business and economics (for example, Arrow (1965), Friedman and Savage (1948), Markowitz (1959), Raiffa (1968), Libby and Fishburn (1977)). More recently, Kahneman and Tversky (1979) and Tversky and Kahneman (1981) have noted that individuals are risk seeking when faced with loss situations or when they are below their target or aspiration levels. Therefore, they proposed a theory of risky choice called prospect theory which questions the assumption of global risk aversion in utility theory.

According to prospect theory, risk preferences are a mixture of risk seeking and risk averse behavior which is reflected in an appropriately defined value (or utility function). The concept of a target or reference point serves to delineate the domain of the decision maker's utility function into a region of gains and a region of losses. The target point can be conceptualized as either a current wealth level or an aspiration level that serves as a goal or target for the individual. The form of the utility function is consistent with a mixture of risk seeking behavior below the target level and risk averse behavior above the target level. This pattern of behavior has also been confirmed in several empirical studies including those by Mao (1970), Siegel (1957), Kahneman and Tversky (1979) and Laughhunn, Payne, and Crum (1980).

From a research viewpoint, it is important to question whether the experimental-individual research results on risk attitudes and risky choice (such as those of Kahneman and Tversky (1979), or Laughunn, Payne and Crum (1980)) can be translated into the world of corporate organization behavior. Bowman (1982) noted that the literatures of

economics and political science both advance the proposition, in models commonly described as rational-actor models (Allison (1971)), that the organization (firm) may act as an individual. Indeed, his research based upon content analyses of companies in three industries confirmed the notion that companies may behave in a similar manner to individual decision-makers. He found that troubled companies (like troubled individuals) take larger risks--thus, supporting the adoption of the experimental-individual research in the context of corporate decision-making.

In this study, it is assumed that individual-level risky choice research can provide a framework for understanding firm-level, corporate risk decisions. Therefore, a research methodology will be developed to test the hypothesis that attitudes toward risk (conceptualized in terms of prospect theory's utility function) can explain the relationship between risk and return both <u>across firms</u> and <u>within industries</u>. It will be hypothesized that the risk/return relationship has a U-shaped form meaning that negative association is expected below the target (reference point) return level and positive association above the target return level.

The paper begins with a literature review of previous risk-return studies. Research hypotheses and methodologies are then formulated and results presented and interpreted. Conclusions about appropriate future strategic risk studies are then identified. It is argued that industry-level risk-return studies should be the benchmark for further understanding of corporate strategic risk.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Risk-Return Research

Some of the important studies which have examined risk return patterns in different industry contexts are summarized in Table I, and discussed in succeeding paragraphs.

INSERT TABLE I ABOUT HERE

Conrad and Plotkin (1968) investigated the relationship between risk and return across U.S. industries for the 1950-1965 time period. Their data included 783 firms representing 59 industries (SIC 2 digit). Calculating the average risk and return for each industry, regression analysis was used to estimate the impact of industry risk on industry return. They found a significant positive relationship between industry average risk and return.

Fisher and Hall (1969) investigated the impact of risk on return, covering firms from 11 industries, for the 1950-1964 period. In one test all the firms were pooled together and a significant positive impact of firm risk on return was demonstrated. Fisher and Hall introduced a dummy variable to account for the industry effect (i.e., differences in industry characteristics) in their regression equations. They again found significant positive risk-return association at the industry level.

Cootner and Holland (1970) also examined the relationship between risk and return, for both firm and industry levels. They used data drawn from 315 firms in 39 industries for the 1946-1960 period. In the

industry-level investigation, they found a significant positive relationship between risk and return for the whole period. Performing the industry-level regression analysis for each year separately they found positive relationships which were statistically significant for about half of the years under study. When they pooled all firms together to test the overall relationship between risk and return they again found a significant positive relationship.

Hurdle (1974) used cross section data drawn from 228 United States manufacturing firms, and a sample of 85 manufacturing industries to examine both the firm and industry risk-return effect. In the firm-level study, which covered the 1960-1969 time period, significant positive correlations between firm risk and return were found. Hurdle also researched the impact of risk on return at the industry level and again found a significant positive association between risk and return.

Armour and Teece (1978) did not directly assess the nature of the risk return relationship. In a study investigating the impact of organizational structure on economic performance for a sample of 28 firms from the petroleum industry for the period 1955-1973, they introduced a risk measure in their equation for two periods: 1955-1968 and 1969-1973. The estimated coefficients of risk were found to be negative in sign, but they were not significantly different from zero at the 90 percent confidence interval.

Neumann, Bobel, and Haid (1979) investigated the relationship between risk and return for a sample of 334 West German industrial firms for the 1965-1973 time period. Two measures of risk were calculated: first the variance of firm profit over time and second, the covariance

of firm profit with the market portfolio. When all firms were pooled together in their regression equation, both measures of risk showed significant positive association with return. When the firms were divided into two groups according to their size, (small or large firms) negative risk return relationships were identified. In the case of large firms the covariance risk measure was negatively correlated with return whereas for small firms the variance risk measure was negatively correlated with return. However, the researchers downplayed the negative impact findings arguing that "we found it unreasonable to accept the implication that investors are risk lovers," (p. 229, emphasis is added).

Bowman (1980) investigated the risk/return association at both the firm and industry levels using Value Line data. Bowman's main research results are summarized below.

> The main sample consisted of 85 industries and 1572 companies for the nine-year period (1968-76). Of this total set of 85 industries, 56 supported the hypothesis of a negative correlation between risk and return (statistically significant beyond 0.001), 21 refuted it and eight were tied.
>
> A smaller sample of 11 industries from Value Line was also analyzed for the time period 1972-76. Ten out of the 11 industries studied showed negative association over the five-year time period (Bowman (1982:35)).

Bowman coined the term "paradox" for his findings since economic theory and the results of the majority of previous empirical studies had postulated the existence of positive correlation between risk and return.

Treacy (1980) replicated Bowman's results with the Standard & Poor Compustat database. For a sample of 1,458 firms representing 54 two digit SIC industries for the time period 1966-1975, he found that risk and return were negatively correlated within and across industries. Treacy also examined whether firm size would explain the negative risk-return relationship but he did not find significant results.

In a later study, Bowman (1982) provided a preliminary test of the hypothesis that the paradox may be explained by the firm's attitude toward risk. Three content analysis studies involving firms in the food processing, computer, and container industries supported the risk attitude hypothesis. Bowman speculated that troubled firms may take more risk than their more successful peers, which would be consistent with the "paradox" findings.

The hypothesis that certain corporate diversification strategies may influence risk-return performance has been tested by Bettis (1981), Montgomery and Singh (1984) and others using Rumelt's (1974) categories of diversification strategy. Bettis (1981), Bettis and Hall (1982), and Bettis and Mahajan (1984) investigated the relationship between risk and return for related and unrelated diversified firms for a sample of eighty companies examined over the 1973-77 time period. They showed that a negative relationship (high return, low risk or vice-versa) is more likely to exist for related diversified than unrelated diversified organizations. Bettis and Mahajan (1984: 16) also noted the importance of industry characteristics in determining superior risk return performance. They therefore conclude that such

factors as diversification strategy and industry context may explain the existence of the risk-return paradox.

Marsh and Swanson (1984) re-examined Bowman's risk-return results using a different research methodology. They adjusted firm ROE in order to eliminate autocorrelation among observations over time. In addition, they adopted a transformation to eliminate the cross-sectional interdependence between the ROEs for different firms in the same year or quarter. For their research sample which included 135 firms for the time period 1958-1981 they found no significant negative correlation between average ROEs and their variance.

Fiegenbaum and Thomas (1985a, 1985b) hypothesized that the risk-return paradox may depend upon the time period studied. They, therefore, examined the dynamic behavior of Bowman's risk/return relationship and questioned whether the risk return paradox is stable across time. They included more than 2000 firms representing 48 SIC two digit industries for the time period 1960-1979. Separate analyses were performed for the non-overlapping five year time periods 1960-64, 1965-69, 1970-74 and 1975-1979 using the Compustat® data base. They found significant negative association for the two time periods in the 1970's while positive association (though only significant for 1965-69) was found for the two time periods in the 60's. They also showed that the paradox disappears when market-based risk measures were used.

Therefore, to summarize the existing risk-return literature (shown in Table I) a number of variables, including size, time, industry environment and diversification strategy, have been used to explain the characteristics of the risk/ return association. While most of

the studies found positive risk-return correlation, particularly those studies involving data covering time periods in the late 1950's and 1960's, negative association (the risk-return paradox) was more commonly found with sample data drawn from time periods in the 1970's.

Prospect Theory in Risk/Return Studies

Most of the literature dealing with risky choice behavior assumes that decision makers are risk averse. This assumption is a basic premise of much research in business, finance, economics, and management science. In terms of utility theory, the assumption implies that a decision maker has an utility function which is uniformly concave.

Many researchers (e.g., Friedman and Savage (1948), Grayson (1959), Yaari (1965), Swalm (1966)) have questioned the assumption of global risk aversion on both theoretical and empirical grounds. Indeed, Fishburn (1977) developed a set of models in which he showed the existence of a U-shaped function which captured the relationship between risk and return. Fishburn and Kochenberger (1979) empirically assessed 30 utility functions for below target data and above target data and concluded that the majority of below-target and above-target functions are risk seeking and risk averse, respectively.

> The majority of below target functions were risk seeking; the majority of above target functions were risk averse; and the most common composite shape was convex-concave, or risk seeking in losses and risk averse in gains (Fishburn and Kochenberger (1979), p. 503).

Kahneman and Tversky (1979) proposed prospect theory in order to counter the criticisms expressed about utility theory and the assumption of global risk aversion. According to prospect theory, outcomes

are expressed as positive or negative deviations (gains or losses) from a neutral reference outcome which is assigned a value of zero. The value function is convex below the reference outcome and concave above the reference outcome, which is consistent with the assumption of risk aversion in choices involving gains and risk seeking in choices involving losses.

Following a series of laboratory experiments, they confirmed the convex-concave form of the value function and other basic properties of prospect theory. In a laboratory study, Laughunn, Payne, and Crum (1980) also reported on the risk preferences for below target returns of 224 managers from U.S., Canada, and Europe. They found that when only non-ruinous losses were involved, 71% of the managers were risk seeking for below target returns (p. 1238). These findings were also confirmed when conditions such as managers' background, the size of the below target outcome, and the context of personal risks versus managerially based risks were considered (see also Crum, Laughhunn, and Payne (1980)).

In summary, prospect theory argues that decision makers are risk seekers below a target level and risk averse above a target level. Both laboratory experiments and real world situations have confirmed this behavior. Following Bowman (1982) it is assumed that firms behave as individuals in risky choice situations and that prospect theory can explain Bowman's risk-return paradox. Therefore, in the next section prospect theory explanations of firm and industry-level risk-return associations are examined and tested.

RESEARCH HYPOTHESES AND METHODOLOGY

As noted earlier in this paper, prospect theory argues that the risk/return relationship has a nonlinear functional form. Below the target return or wealth level, decision-makers are risk seeking while above the target level, decision-makers are risk averse. Therefore, assuming individual decision-maker and firm risk preferences are in one-to-one correspondence, the broad formal research hypotheses can be stated as follows:

H1: A negative association between risk and return exists for firms below target return levels no matter what are the underlying environmental conditions.

H2: A positive association between risk and return exists for firms above target return levels no matter what are the underlying environmental conditions.

More-focussed research hypotheses which propose that prospect theory's findings should hold both within and across industries are structured in the following manner:

H1a: A negative association between risk and return exists for firms below target return levels within industries.

H1b: A negative association between risk and return exists for firms below target return levels across industries.

and

H2a: A positive association between risk and return exists for firms above target return levels within industries.

H2b: A positive association between risk and return exists for firms above target return levels across industries.

In order to operationalize these research hypotheses certain research issues merit attention. They include the determination of an appropriate target level and the identification of an appropriate research

sample and research methodology. These issues are discussed in turn in the following paragraphs.

Determining a Target Level

An important issue in operationalizing prospect theory is to identify a measure for the target return (wealth) level. There is no general rule which defines the appropriate target for each situation, although Tversky and Kahneman (1981) recognize the problem and suggest a number of useful criteria for choosing an appropriate target. In this study the traditional literature of financial statement analysis provides a basis for setting an appropriate return target. Lev (1969: 290) suggests that firms adjust their performance to the industry average. He emphasizes "the desirability of adjusting the firm's financial ratios to predetermined targets which are usually based on industry wide averages." Lev (1969) also performed an empirical study on 900 major U.S. firms in which he confirmed the hypothesis that financial ratios are periodically adjusted to their industry means. Frecka and Lee (1983) used another data set for a study of financial ratios and their results support Lev's (1969) hypothesis that financial ratios adjust in a dynamic fashion to targets which appear to be industry wide averages of those ratios. Therefore, an average performance (return) level may be used as an appropriate proxy for a given firm's target level.

Since the purpose of this study is to test the nature of the association between risk and return, both within and across industries, the following target return levels were assumed. First, for firms

within the same industry the industry median ROE (return on equity) was used as the target measure.[1] Second, the overall sample median ROE was used as the target across industries.

Sample, Measures, and Time Period

The COMPUSTAT® data base was used to develop a research sample of firms and industries for the 1960-1979 time period. This time period was chosen since it represented a wide range of economic and environmental conditions and also covered the range of time periods examined in Bowman's (1980, 1982) studies. Separate analyses were then performed for the nonoverlapping five year time periods 1960-64, 1965-69, 1970-74 and 1975-79, for the ten year periods 1960-69 and 1970-79 respectively, and finally, for the entire twenty year period 1960-1979. These different time periods were selected in order to examine the possibility that the choice of different time periods may influence risk-return results. For each time period, the average ROE and variance of ROE were calculated as measures of firm return and risk. The variance of a firm's return over time has been used as a proxy for risk by many researchers such as Fisher and Hall (1969), Armour and Teece (1978), Bettis (1981) and Bowman (1980). However, while financial economics emphasizes the importance of systematic risk, in this study accounting measures of risk will be used since they can be more directly controlled and used by management. Further, by using accounting measures, the research results can be compared with previous studies that have used the same measures.

In order to examine hypotheses (H1a and H2a) about the nature of the risk-return association within industries the following procedure was adopted. For each time period, the average ROE and variance of ROE were calculated for each firm in each SIC two digit industry. Only industries with at least five firms in each category (below and above the target level) were included in the research sample. Within each industry a rank order of all firms based on average ROE for the time period was constructed and then divided at the median. Firms with ROE values below the industry median were considered as below target and vice-versa. The total sample included 47 industries and 2322 firms for the 1975-79 period--the final period in the research sample.

Hypotheses (H1b and H2b) about risk-return patterns across industries were examined in a similar manner. As in the case of the industry level research, the average ROE and variance of ROE were calculated for each firm for each time period. A rank order of all firms across all industries based on average ROE for the time period was then constructed and divided at the median. Firms below the median were considered as below target and vice-versa. Again the sample involved 2322 firms for the 1975-79 period.

Statistical Tests for Investigating the Risk/Return Association

In testing the risk/return association, a choice had to be made between using parametric or non-parametric statistical tests (Winkler and Hays (1975)). Nonparametric tests were used for the following reasons. First, when the risk-return data were graphed extreme

outliers were found which could bias the results found from parametric tests. Second, since the research interest focussed upon the sign rather than the size of the risk-return association, it was felt that non-parametric tests might be more appropriate. Third, a number of previous studies (for example, Bowman (1980), Treacy (1980), and Fiegenbaum and Thomas (1985)) had justified the use of non-parametric tests for similar problems.

Two basic non-parametric approaches were used in this study. First, contingency table analysis was performed in the following manner. For each category (below target return and above target return) a rank order of all firms for each characteristic, namely, ROE and ROE variance was constructed and then divided at the median. Each firm was then deemed to be high or low on each of the characteristics leading to one of the four possibilities (or quadrants in a two by two contingency table): High ROE, High variance (HH), High ROE, Low variance (HL), Low ROE, High variance (LH) and Low ROE, Low variance (LL). Negative association ratios (i.e., (HL + LH) divided by (HH + LL)) were calculated for each category (below and above target), for each SIC two digit industry, for each time period, as well as for all firms pooled across industries.

Second, measures of risk-return association using Spearman rank order correlation coefficients (Winkler and Hays (1975:867)) were calculated from the risk-return rank order data derived from the industry and firm risk-return analyses.

Thus, Spearman rank order correlations and negative association ratios were calculated for each SIC 2 digit industry, as well as for

the entire sample. This procedure was repeated for each one of the seven time periods: 1960-64, 1965-69, 1970-74, 1975-79, 1960-69, 1970-79, and 1960-79.

In summary, the research procedures in this section are designed to test the hypothesis that negative association between risk and return will be found for firms below target (ROE) levels and positive association will be found for firms above target (ROE) levels both within and across industries. It should be noted that two target ROE levels were assumed, namely, the industry median ROE for studying the risk return association within industries, and the overall firm median ROE for studying risk return association across industries. Further, in order to maintain consistency with previous risk-return research, two non-parametric tests involving the use of contingency tables and Spearman rank order correlation analysis were used to analyze risk-return associations for different time periods.

RESEARCH RESULTS

The detailed research results are reported in Appendices 1 and 2 of the paper. However, the main results are summarized in Tables 2 through 5 and are interpreted in the following discussion.

Below Target-Level Results

The results identifying risk-return patterns below target return levels (essentially Hypothesis 1) are first presented.

Industry Level: Within Industry Results (Hypothesis 1a)

The risk/return association was calculated for each industry separately for firms below the industry median (target) level. Table 2 presents the results of both the Spearman correlation and negative association ratio analyses.

INSERT TABLE 2 ABOUT HERE

In the case of the Spearman risk-return correlation analysis, negative risk-return correlations were found for most industries in each time period. A binomial test, similar to Bowman's (1980) version, was performed to test the null hypothesis (i.e., $p = 0.50$, as many positive as negative correlations) that there is no association between risk and return. This hypothesis was rejected in favor of the alternative hypothesis that risk and return are negatively correlated (at a significance level of less than .01% for each time period (see column 2). When only industries with significant association (whether positive or negative) between risk and return were considered (column 3) it was found that negative association was the dominant mode (see column 4 of table).

The negative association ratio results (column 5) also support the dominance of negative risk-return association (all ratios are significantly greater than 1) across industries.

Firm Level: Across Industry Results (Hypothesis 1b)

The ROE median was calculated for the entire sample of firms pooled across industries. Firms below the median were considered as being

below the target level. The left-hand side of Table 3 presents the values of both the Spearman correlation and the negative association ratio for "below target" firms.

INSERT TABLE 3 ABOUT HERE

It should be noted that for every time period, the Spearman risk-return correlation was found to be significantly negative at a significance level less than .01%. The results were also confirmed by the negative association ratio analysis which shows that the values of these ratios are consistently greater than 1 (meaning negative association) for all time periods. Therefore, Hypothesis 1b is strongly supported across a wide range of industries using the results shown in column 5 of Table 2 and Table 3.

In summary, the results in Tables 2 and 3 support the hypothesis (H1) that a negative association exists between risk and return for firms with ROE's below the target level for all time periods. In addition, this hypothesis is strongly confirmed both within (H1a) and across (H1b) industries.

Above Target-Level Results

The results examining risk-return patterns above target return levels (essentially Hypothesis 2) are reported in the following sections.

Industry Level: Within Industry Results (Hypothesis 2a)

Table 4 describes the results of both the Spearman and positive (the inverse of the negative association ratio) association ratio analysis for firms with ROE's above the industry target level.

INSERT TABLE 4 ABOUT HERE

For most industries positive and highly significant Spearman risk-return correlations were found (see column 2). When the number of industries with significant positive association was compared with the number of industries with significant association (either positive or negative), virtually all industries (except for the 1975-79 time period) showed positive association (see column 4). The positive association ratios (column 5) further confirm the findings of the Spearman risk-return correlation analysis.

Firm Level: Across Industry Results (Hypothesis 2b)

Similar research methods (involving pooling all firms across industries) as for the BELOW TARGET case were followed in this situation. For each time period, the Spearman risk-return correlation coefficient was found to be strongly positive at a significance level of .01 percent (see the right-hand side of Table 3). Further the calculated negative association ratios were less than one for all time periods meaning that risk and return are positively correlated. This indicates that the positive association hypothesis for firms with ROE's above the target level is upheld across a wide range of industries. Therefore, Hypothesis 2b is strongly supported.

In summary, Tables 3 and 4 show the existence of positive association between risk and return for firms with ROE's above the target level for all time periods. This positive association finding holds both within (H2a) and across (H2b) industries and validates Hypothesis 2 postulated earlier in this study.

DISCUSSION, CONCLUSIONS AND FURTHER DIRECTIONS

The purpose of this study was to show that the concept of attitude toward risk can be used to explain firm-level risk return associations and the so-called negative risk-return paradox. More specifically, it was proposed, using prospect-theory as a framework, that risk preference is a nonlinear function of return. Below a target ROE level decision-makers are risk seeking while above a target level decision-makers are risk averse. These propositions, assuming a one-to-one correspondence between firm and decision-maker risk attitudes, imply negative association between risk and return for firms below target ROE levels and positive association for firms above target ROE levels both within and across industries.

Using COMPUSTAT data for U.S. industrial firms for a wide range of time periods reflecting different environments between 1960-79, the results strongly support the propositions drawn from prospect theory. Earlier studies (Fiegenbaum and Thomas (1985a, 1985b)) showed that the risk return association may be either positive or negative depending upon the time period chosen. In contrast, the main contribution of this study is that it consistently shows that, when a target ROE value is introduced either at the firm or industry level, risk and return

are negatively correlated for below-target firms and positively correlated for above target firms irrespective of the time period or the underlying environmental conditions. This suggests, in line with the behavioral assumptions of prospect theory, that the majority of firms may be risk seeking in loss situations or when they are below target aspiration levels. Conversely, they will tend to be risk averse following achievement of aspirations and targets.

The study's empirical results can be described graphically in terms of Figure 1.

INSERT FIGURE 1 ABOUT HERE

In that figure, two hypothetical lines are drawn to describe the association between risk and return. Line 1 represents a consistently negative risk-return association whereas line 2 represents a consistently positive risk-return association. However, the results derived from this study suggest that the risk-return relationship in both cases is probably non-linear and U-shaped as exemplified by Curves 3 and 4 respectively. Curves 3 and 4 may, therefore represent the "true" relationship between risk and return.

If the U-shaped function is a realistic representation of the risk-return association, it seems sensible to examine the risk return association for firms close to the "target" level. Prospect theory would suggest that there will be almost no measurable association between risk and return when firms near the target level are considered. In order to test this hypothesis the sample of firms was divided into tertiles, representing below target, target and above

target segments respectively. Spearman rank order correlations were calculated at both the firm and industry levels. Table 5 presents the results for only the middle or target segment.

INSERT TABLE 5 ABOUT HERE

It can be seen that most of the industries around the middle or target segment tertile show no significant association between risk and return (column 2). Spearman correlations calculated across firms also show little evidence of significant association between risk and return (column 3). These findings support the hypothesis of no significant correlation around the target level.

While the U-shaped risk-return relationship proposed in the paper appears to be an appropriate model to explain observed risk-return relationships, further research must concentrate upon the nature of risk return trade-offs for firms which are categorized as being either below or above target level. It is probable that this research should be carried out first at the industry level in order to control for factors and characteristics explaining risk at the industry level (Baird and Thomas (1985)). Within a given industry, some below target firms may have exhibited such behavioral tendencies as escalating commitment to particular courses of action (Staw (1981)) or organizational inertia to changing circumstances (MacMillan and MacCaffery (1982)) which may, in turn, lead to the possibility of high risks and low returns. However, some firms of larger size may be able to trade-off risk and return to achieve high returns and low risks and achieve above-target performance. Yet, factors such as organizational rigidity or X-inefficiency

(Leibenstein (1966)) may impede other large firms from achieving high return-low risk profiles. Therefore, further industry studies such as d'Aveni's (1985) paper on risk-return strategy trade-offs in the forest products industry should provide insights about the nature of risk-return trade-offs within particular industries. In addition, other managerial explanations--such as agency theory and diversification strategy--can be tested more fully in 'rich' fine-grained (Harrigan (1985)) studies of single industries. These 'rich' studies are also fully consistent with Bowman's (1980:27) suggestion that industry-specific characteristics, such as regulation or industry context (service vs. manufacturing), may provide reasonable conjectures about the causes of observed risk-return trade-offs and thus enrich our understandings of the factors influencing negative risk-return associations.

Footnotes

[1]The median (ROE) level was chosen since it represents the 'middle point' of the return distribution and is unaffected by extreme outliers. Thus, the median may better indicate managerial perceptions of target performance than the mean.

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TABLE 1

Risk/Return Association: Summary of Major Empirical Studies

Study	Time Period	Sample	Intervening Variable	Risk/Return Association
Conrad & Plotkin (1968)	1950-65	783 companies representing 59 industries	Industry Effect	Significant positive relationship
Fisher & Hall (1969)	1950-64	11 industries	Industry effect	Significant positive relationship, for both firm and industry level
Cootner & Holland (1970)	1946-60	315 companies representing 39 industries	Industry effect & time	Significant positive relationship for both firm and industry level. The industry relationshi showed consistency for each year.
Hurdle (1974)	1960-69	228 firms representing 85 industries	Industry effect	Significant positive relationship for both firm and industry level.
Armour & Teece (1978)	1955-73	28 firms from the petroleum industry	Time	Negative but not significant relationship between firms' risk and return.
Neumann, Bobel and Haid (1979)	1965-73	334 West German industrial stock companies	Firm size	Significant positive for the whole sample. When the sample was divided into big and small companies, positive and negative association was found between firms' ris and return.
Bowman (1980)	1968-76 1972-76	A) 1572 companies representing 85 industries B) 11 industries	Industry effect	Significant negative association between risk and return within industries. In addition negative (but not significant) association across industries.

TABLE 1 (cont'd.)

Risk/Return Association: Summary of Major Empirical Studies

dy	Time Period	Sample	Intervening Variable	Risk/Return Association
acy (1980)	1966-75	1458 companies representing 54 industries	Firm size	Significant negative association between risk and return within and across industries.
man (1982)	1979	food processing, computer, and container industries	Troubled situations	Significant negative association between risk and return within industries for troubled companies.
tis (1981) tis & Hall 82) tis & Mahajan 84)	1973-77	80 companies	Diversification strategy and industry characteristics	Significant positive association between risk and return for unrelated firms. Significant negative association for related firms. No statistically significant association for related linked.
sh & Swanson 84)	1958-81	135 firms		No statistical significance between risk and return.
genbaum & mas (1985a)	1960-79	ranges from 345 to 700 companies representing 7 industries	Time	Significant positive association during the 70's. Significant negative association between 1965-1969.
genbaum & mas (1985b)	1960-79	ranges from 1283 to 2394 companies representing 37 to 56 industries respectively	Time and risk measurement	Significant negative for accounting measures of risk during the 70's. Significant positive for accounting measures of risk during the 60's. No statistical significance for market risk measure.

TABLE 2

Risk/Return Association For Firms'
Below Industry Target Level

Time period	# of industries	Spearman correlation analysis			Negative association ratio analysis
		# of industries with negative correlation	# of industries with significant (either positive or negative) association	# of industries with significant negative association	# of industries with negative association ratio
	Column 1	Column 2	Column 3	Column 4	Column 5
1960-64	34	30 (88.2%)[a],*	19	19 (100%)[b],*	23 (67%)[c]*
1965-69	41	34 (82.9%)*	20	18 (90%)*	29 (70%)*
1970-74	46	44 (95.6%)*	38	38 (100%)*	41 (89%)*
1975-79	47	47 (100%)*	32	32 (100%)*	42 (89%)*
1960-69	36	34 (94.4%)*	16	16 (100%)*	26 (72%)*
1970-79	47	47 (100%)*	38	38 (100%)*	44 (94%)*
1960-79	46	45 (97.8%)*	34	34 (100%)*	42 (91%)*

Notes:

* - Significant negative association at a significance level of less than .01% [Bowman's binomial test is used here]

a - as a percentage of total number of industries $(\frac{\text{column 2}}{\text{column 1}})$

b - as a percentage of number of industries with significant association (either positive or negative) $(\frac{\text{column 4}}{\text{column 3}})$

c - as a percentage of total number of industries $(\frac{\text{column 5}}{\text{column 1}})$

TABLE 3

Statistics for Firms' Risk/Return Association
Below and Above Target Across Industries

Time Period	Below Target			Above Target			Total # of companies (below & above target)
	Spearman rank order correlation	Negative association ratio	# of Companies	Spearman rank order correlation	Negative association ratio	# of companies	
1960-64	-.45*	1.84	705	.42*	.57	705	1410
1965-69	-.42*	1.70	946	.55*	.42	946	1892
1970-74	-.59*	2.27	1166	.36*	.63	1166	2332
1975-79	-.60*	2.30	1210	.36*	.61	1210	2420
1960-69	-.48*	2.0	807	.50*	.52	807	1614
1970-79	-.63*	2.87	1197	.40*	.60	1197	2394
1960-79	-.59*	2.35	1161	.49*	.51	1161	2322

*: Significant at less than .01%

TABLE 4

Risk/Return Association For Firms'
Above Industry Target Level

Time period	# of industries	Spearman correlation analysis			Positive association ratio analysis
		# of industries with positive correlation	# of industries with significant association (either positive or negative)	# of industries with significant positive association	# of industries with positive (ratio less than 1) association ratio
	Column 1	Column 2	Column 3	Column 4	Column 5
1960-64	34	29 (85.2%)[a],*	11	11 (100%)[b],*	29 (85%)[c]*
1965-69	41	38 (92.6%)*	29	29 (100%)*	37 (90%)*
1970-74	46	42 (91.3%)*	22	22 (100%)*	34 (74%)*
1975-79	47	35 (77%)*	18	17 (95%)*	31 (66%)*
1960-69	36	36 (100%)*	20	20 (100%)*	34 (94%)*
1970-79	47	36 (76.5%)*	27	27 (100%)*	35 (75%)*
1960-79	46	42 (91.3%)*	25	25 (100%)*	38 (83%)*

Notes:

* - Significant positive association at a significance level of less than .01% [Bowman's binomial test is used here]

a - as a percentage of total number of industries $(\frac{\text{column 2}}{\text{column 1}})$

b - as a percentage of number of industries with significant association (either positive or negative) $(\frac{\text{column 4}}{\text{column 3}})$

c - as a percentage of total number of industries $(\frac{\text{column 5}}{\text{column 1}})$

TABLE 5

Spearman Rank Order Analysis for Firms Around the
TARGET LEVEL (Middle Tertile) Within and Across Industries

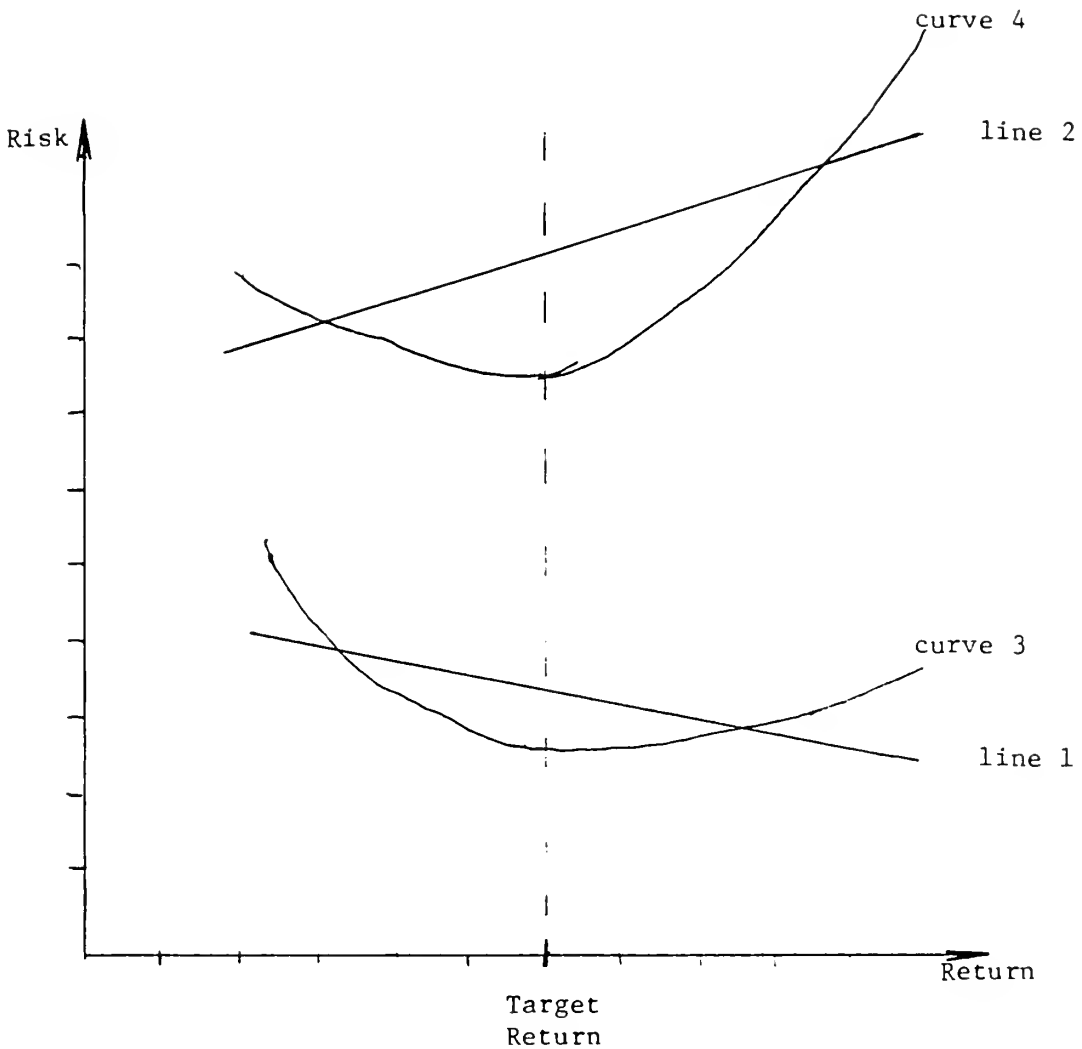
Time Period	# of industries column 1	Within industries # of industries with significant association (either positive or negative) column 2	Across firms column 3
1960-64	34	1 (2.9%)[a]	-.03
1965-69	41	7 (17.0%)	.16*
1970-74	46	4 (8.6%)	-.03
1975-79	48	5 (10.4%)	-.11*
1960-69	36	4 (11.1%)	.06
1970-79	47	6 (12.7%)	-.05
1960-79	46	6 (13.0%)	.001

Notes: a - denotes the percentage of industries with significant association $(\frac{\text{column(2)}}{\text{column (1)}})$.

* - denotes significantly different at less than .01% level.

FIGURE 1

Risk/Return Relationships



Negative Association Ratio for BELOW and ABOVE
Industry Target[a]

SIC	1960-1964		1965-1969		1970-1974		1975-1979		1960-1969		1970-1979		1960-1979	
GROUP	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above
10	1.33	.85(13)	1.42	.60(16)	.88	.33(16)	1.42	.33(16)	2.0	.75(14)	4.66	.60(16)	1.42	.14(16)
12					4.0	4.0(5)	00	.5(6)			2.0	.66(6)	4.0	.66(5)
13	.85	.50(12)	2.66	.57(22)	3.42	.47(31)	1.69	1.33(35)	1.25	.88(17)	1.83	.41(34)	3.42	.34(31)
15			1.33	2.0(6)	2.0	1.0(12)	2.0	2.0(12)			2.0	2.0(12)	5.0	2.0(12)
16	.00	.66(5)	.40	.40(7)	8.0	.80(9)	2.0	.28(9)	2.0	.50(6)	8.0	.8(9)	2.0	.80(9)
20	1.62	.64(41)	1.36	.66(45)	1.88	.06(48)	1.50	.68(49)	1.75	.46(44)	1.88	.48(49)	2.76	.60(48)
21							4.0	.0(5)			.66	.0(6)		
22	3.33	.44(13)	.80	.54(17)	4.0	.71(24)	3.33	.47(25)	1.14	.60(15)	3.33	.47(26)	1.77	.50(24)
23	1.33	.85(13)	1.50	.22(19)	2.85	.44(26)	13.0	.80(27)	1.14	.66(15)	2.85	.85(27)	2.85	.40(26)
24	2.0	.0(5)	1.50	.28(9)	4.0	.75(14)	2.0	1.0(15)	.40	.33(7)	4.0	1.66(16)	2.50	1.33(14)
25			.0	.66(5)	.0	.66(5)	2.0	4.0(5)			2.0	4.0(5)	00	.66(5)
26	2.0	.80(18)	1.50	.46(19)	2.0	2.0(21)	3.20	.90(21)	.80	.50(18)	6.0	.90(21)	3.20	1.0(20)
27	5.0	.50(12)	1.50	.72(19)	1.40	.53(23)	1.0	.20(24)	.75	.44(13)	1.4	.20(24)	2.0	.35(23)
28	1.52	.59(49)	1.57	.50(48)	1.16	.73(52)	2.23	1.25(54)	1.64	.66	1.89	.50(54)	1.60	.62(52)
29	2.33	.46(19)	2.0	.66(20)	3.0	.76(23)	2.0	.35(23)	2.33	.66(20)	1.40	.35(23)	1.40	.53(23)
30	1.14	1.14(15)	.72	.72(19)	.66	1.50(20)	1.33	.90(21)	2.40	.33(16)	1.50	.66(20)	2.33	.42(20)
31	2.0	.50(6)	3.0	1.0(8)	2.0	.28(9)	.66	.80(9)	6.0	.50(6)	2.0	.28(9)	.80	.80(9)
32	.85	.20(12)	1.14	.33(15)	2.80	.50(18)	2.33	1.50(20)	.75	.75(14)	5.33	.46(19)	1.11	.28(18)
33	2.50	.80(27)	2.0	.60(32)	2.18	.70(34)	2.18	.88(34)	2.50	.55(28)	2.18	.54(34)	2.18	.70(34)
34	3.66	.42(27)	1.46	.60(37)	2.30	.75(42)	2.46	.55(45)	2.0	.36(30)	4.50	.69(44)	2.30	.61(42)
35	1.08	.66(50)	1.42	.41(68)	2.33	.83(79)	2.32	.78(82)	2.0	.70(53)	2.85	.66(80)	2.43	.69(78)
36	2.28	.76(46)	2.0	.66(60)	4.30	.78(68)	2.13	.80(72)	3.07	.73(52)	5.0	.65(71)	2.28	.61(68)
37	1.83	.94(33)	1.11	.35(38)	1.86	.75(42)	1.70	.72(43)	1.53	.38(36)	2.30	.48(43)	1.86	.50(42)
38	1.0	.33(16)	1.60	.47(25)	2.22	.55(28)	2.0	.93(29)	1.0	.42(20)	4.0	.70(29)	3.14	.55(28)
39	.00	.33(8)	2.0	.57(11)	2.40	.54(17)	2.0	.88(17)	2.0	.28(9)	2.40	.88(17)	2.40	.60(16)
40			2.0	.66(5)	.80	1.0(8)	.80	2.0(9)	4.0	.0(5)	.80	.80(9)	.0	3.0(8)
42	.20	1.0(8)	1.50	.28(9)	10.0	.22(11)	1.20	.22(11)	8.0	.33(8)	2.66	.22(11)	2.66	.25(10)
45	2.66	.57(11)	2.0	.20(12)	3.33	1.60(13)	1.33	1.60(13)	10.0	.57(11)	00	3.33(13)	3.33	.44(13)
48	.57	.22(11)	1.60	.20(12)	1.33	.75(14)	2.50	.40(14)	5.0	.50(12)	2.5	.16(14)	2.50	.16(14)
49	.90	.52(76)	.92	.92(79)	1.51	.74(82)	.79	.53(86)	1.33	.87(77)	1.38	.72(86)	1.67	.64(82)
50	3.33	.85(13)	.66	.66(20)	4.40	1.16(26)	3.66	1.45(27)	1.14	.75(14)	3.66	1.07(27)	1.45	.44(26)
51	4.0	2.0(9)	3.33	.44(13)	2.0	.60(15)	1.42	.33(16)	1.20	.25(10)	3.0	.60(16)	2.0	.60(15)
53	4.0	1.14(15)	.72	.72(19)	1.27	.71(24)	4.0	.25(24)	1.0	.60(16)	4.0	1.0(24)	1.27	.71(24)
54	.75	.85(13)	1.42	.88(17)	4.0	1.0(20)	4.0	1.0(20)	2.0	1.14(15)	2.33	1.0(20)	2.33	.66(20)
56			.50	2.0(6)	3.0	1.0(8)	2.0	.33(8)			3.0	3.0(8)	3.0	3.0(8)
58			.40	.50(6)	4.0	.25(10)	1.50	1.50(10)			4.0	1.5(10)	4.0	.25(10)
59	2.0	.22(11)	4.0	.36(15)	1.09	.57(22)	2.0	1.40(24)	.85	.85(13)	2.0	.53(23)	2.28	1.20(22)
60	.76	1.75(22)	.96	.83(57)	1.31	1.03(67)	1.61	1.57(67)	1.36	.62(52)	1.83	2.94(67)	1.31	1.16(67)
61	6.0	.40(7)	2.0	.57(11)	1.33	.85(13)	2.50	.40(14)	.40	.40(7)	2.50	.44(13)	2.50	.18(13)
63					2.33	1.11(19)	1.2	1.2(22)			1.75	.83(22)	1.50	.72(19)
65			6.0	1.33(7)	1.60	1.0(12)	14.0	.75(14)			2.0	.75(14)	1.6	2.0(12)
67					3.0	.14(16)	16.0	.60(16)			4.66	.60(16)	7.0	.60(16)
70			00	.50(6)	1.33	.40(7)	1.33	1.33(7)	.66	.0(5)	1.33	1.33(7)	1.33	.50(6)
73	.80	.80(9)	1.33	.25(20)	6.0	.40(28)	4.80	.27(28)	1.14	.40(14)	4.80	.40(28)	3.66	.27(28)
80					.00	.28(9)	1.50	.80(9)			4.0	2.0(9)	1.50	.80(9)
89					2.0	.66(5)	2.0	.50(6)			2.0	.0(5)	00	.66(5)
99	1.33	.33(7)	.8	.0(9)	1.50	.25(10)	4.0	1.5(10)	.8	1.0(8)	1.50	.25(10)	1.50	.0(10)

[a]The number in parentheses describes the number of firms in that category.

APPENDIX 2

Spearman Correlation for BELOW and ABOVE
Industry Target[a]

SIC	1960-1964		1965-1969		1970-1974		1975-1979		1960-1969		1970-1979		1960-1979	
Group	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above	Below	Above
10	-.46***	-.17(13)	-.17	.56(16)**	-.09	.68(16)*	-.31	.40(16)	-.48***	.19(14)	-.75*	.54(16)**	-.53**	.60(16)**
12					-.80***	-.80(5)	-.77***	.54(6)			-.88**	.10(5)	-.90**	.10(5)
13	-.19	.22(12)	-.69*	.35(22)**	-.66*	.48(31)*	-.34**	-.06(35)	-.62*	.21(17)	-.49*	.36(34)**	-.57*	.34(31)***
15			.17	-.54(6)	-.58**	.20(12)	-.56***	-.34(12)			-.55***	-.27(12)	-.70*	-.27(12)
16	-.71	.40(5)	-.03	.21(7)	-.90*	.16(9)	-.65***	.66(9)**	-.42	.60(6)	-.75**	.16(9)	-.75**	.20(9)
20	-.31**	.47(41)*	-.32**	.36(45)**	-.48*	.35(48)**	-.49*	.34(49)**	-.40*	.54(44)*	-.49*	.48(49)*	-.67*	.40(48)*
21							-.60	.70(5)			-.20	1.0(5)*		
22	-.57**	.17(13)	-.06	.42(17)***	-.51*	.23(24)	-.87*	.51(25)*	-.24	.41(16)	-.82*	.38(25)***	-.68*	.57(24)*
23	-.34	.39(13)	-.49**	.70(19)*	-.67*	.44(26)**	-.84*	.03(27)	-.06	.58(15)**	-.70*	.42(26)**	-.61*	.56(26)*
24	-.17	.60(5)	-.15	.51(9)	-.82*	.38(14)	-.77*	.10(16)	.14	.33(7)	-.83*	-.10(16)	-.89*	.23(14)
25			.90**	.70(5)	-.82**	-.30(5)	-.60	-.50(5)			-.77***	-.80(5)	-.94*	.70(5)
26	-.36	.24(18)	-.33	.64(19)*	-.43**	-.18(21)	-.45**	.35(21)	-.18	.49(18)**	-.69*	-.01(21)	-.66*	.25(20)
27	-.70*	-.04(12)	-.46**	.38(19)***	-.53*	.45(23)**	-.07	.64(24)*	-.01	.17(13)	-.21	.52(24)*	-.30	.64(23)*
28	-.33**	.42(43)*	-.42*	.43(48)*	-.27***	.33(52)**	-.54*	.14(54)*	-.36**	.34(40)**	-.44*	.40(54)*	-.33**	.51(52)*
29	-.56*	.41(19)***	-.51**	.42(20)***	-.40**	.25(23)	-.42**	.72(23)*	-.56*	.48(20)**	-.29	.52(23)**	-.38***	.63(23)*
30	-.31	-.12(15)	.007	.49(19)**	.18	-.09(20)	-.56*	.13(21)	-.26	.54(16)*	-.44**	.33(20)	-.33	.60(20)*
31	-.65	.48(6)	-.33	.61(8)***	-.68**	.71(9)**	-.006	.30(9)	-.89*	.65(6)	-.38	.70(9)**	-.06	.41(9)
32	-.10	.36(12)	-.15	.51(16)**	-.78*	.62(18)*	-.55**	.21(20)	-.03	.42(14)	-.84*	.58(19)*	-.53**	.46(18)***
33	-.75*	.13(27)	-.54*	.49(32)*	-.59*	.40(34)**	-.52*	.23(34)	-.64*	.31(28)***	-.60*	.47(34)*	-.58*	.36(34)**
34	-.72*	.62(27)*	-.51*	.47(37)*	-.70*	.33(42)**	-.60*	.43(45)*	-.48*	.55(30)*	-.57*	.43(44)*	-.45*	.55(42)*
35	-.22	.31(50)*	-.38*	.58(68)*	-.66*	.25(79)**	-.60*	.37(80)*	-.41*	.37(53)*	-.68*	.30(80)*	-.53*	.38(78)*
36	-.57*	.28(58)***	-.54*	.40(60)*	-.74*	.23(68)***	-.65*	.21(72)***	-.60*	.28(52)**	-.76*	.23(71)**	-.57*	.47(68)*
37	-.56*	.12(33)	-.28***	.65(38)*	-.63*	.42(42)*	-.47*	.29(43)***	-.54*	.58(36)*	-.59*	.42(43)*	-.48*	.54(42)*
38	.05	.30(16)	-.41**	.55(25)*	-.60*	.25(28)	-.61*	.22(29)	-.32	.53(20)**	-.66*	.29(29)	-.55*	.18(28)
39	-.95*	.42(8)	-.58**	.34(11)	-.54**	.24(17)	-.75*	.31(17)	-.81*	.43(9)	-.69*	.16(17)	-.70*	.20(16)
40			-.54	-.30(5)	.35	.16(8)	-.05	-.18(9)	-.60	.70(5)	-.16	.26(9)	.59	-.19(8)
42	-.60***	.14(8)	-.64**	.86(9)*	-.87*	.61(11)**	-.24	.70(11)**	-.73**	.71(8)**	-.64**	.69(11)**	-.54***	.95(10)*
45	-.53***	.11(11)	-.72*	.79(12)*	-.64**	.06(13)	-.27	-.56(13)*	-.70**	.60(11)**	-.86*	-.08(13)	-.72*	.21(13)
48	.06	.56(10)***	-.60**	.78(12)*	-.22	.20(14)	-.37	.60(14)***	-.58**	.51(14)***	-.52***	.70(14)*	-.36	.78(14)*
49	.09	.38(76)*	-.04	.24(79)**	-.25**	.21(82)**	-.11	.34(86)*	-.12	.20(77)***	-.18***	.37(86)*	-.33*	.39(82)*
50	-.51***	.26(13)	.15	.50(20)**	-.73*	.25(26)	-.64*	23(27)	-.36	.09(14)	-.71*	.25(29)	-.50*	.43*
51	-.64**	.15(9)	-.52***	.80(13)*	-.60**	.25(16)	-.33	.64(16)*	-.32	.62(10)***	-.64*	.50(16)**	-.46***	.52(15)**
53	-.65*	.32(15)	.15	.23(19)	-.22	.54(24)*	-.53*	.53(24)	-.05	.31(16)	-.45**	.39(24)***	-.03	.25(24)
54	-.29	.03(13)	-.26	.35(17)	-.72*	.14(20)	-.79*	-.02(20)	-.19	.43(15)***	-.71*	-.14(20)	-.46**	.05(20)
56			-.02	-.65(6)	-.90*	.07(8)	-.83*	.35(8)			-.90*	-.33(8)	-.52	-.26(8)
58			.50	.71(7)	-.67**	.67(10)**	-.73**	-.26(10)			-.67**	-.13(10)	-.55***	.66(10)**
59	-.55***	.78(11)*	-.39	.62(15)**	-.19	.50(22)**	-.60*	-.25(24)	-.20	.48(13)***	-.36***	.41(23)**	-.50**	.37(22)***
60	.11	-.17(22)	-.03	.33(57)**	-.18	.06(67)	-.47*	-.17(67)	.0006	.40(52)*	-.57*	.47(67)*	-.36*	-.16(67)
61	-.92*	.67(7)***	-.17	.50(11)***	-.49***	.15(13)	-.63**	.78(14)*	-.21*	.53(7)	-.39	.51(13)***	-.36	.76(13)*
63					-.49**	.09(19)	-.06	-.06(22)			-.57*	.04(22)	-.52**	.16(19)
65			-.03	.28(7)	-.53***	.03(12)	-.66*	-.29(14)			-.26	.09(14)	-.28	-.47(12)
67					-.77*	.78(16)*	-.88*	.46(16)***			-.82*	.38(16)	-.83*	.39(16)
70			-.77***	.60(6)	-.42	.60(7)	-.28	-.03(7)	-.50	.60(5)	-.10	-.03(7)	-.60	.25(6)
73	-.23	-.05(9)	-.22	.54(20)**	-.77*	.62(28)*	-.74*	.68(28)*	-.01	.38(14)	-.81*	.71(28)*	-.80*	.71(28)*
80					-.75**	.75(9)**	-.49	.08(9)			-.89*	-.21(9)	-.47	.31(9)
89					-.75***	.20(5)	-.42	.42(6)			-.14	.90(5)**	-.88(6)**	.60(5)
99	-.67***	.61(7)***	.65***	.86(9)*	-.80*	.58(10)***	-.80*	.18(10)	-.10	.20(8)	-.73*	.83(10)*	-.38	.81(10)*

*Significant at less than .01 percent level.
**Significant at less than 1.0 percent level.
***Significant at less than 5.0 percent level.

[a]The number in parentheses describes the number of firms in that category.